Europe, we should expect to find that almost all the species have since become modified, and that these islands would offer us a larger proportion of highly specialised and ultra-indigenous forms than Madeira itself. The exact contrary, however, is the fact, for, out of more than 200 species only about sixteen are peculiar.

Taking the geodephagous group, the species of which, both Mr. Murray and Mr. Wollaston believe, are least liable to be introduced by man, we find that two only are peculiar, while sixteen are European. The Rhynchophora only equal the Geodephaga in number of species, and seven of these are peculiar. Leaving out a large number of species which have, there is little doubt, been introduced through human agency, there remain more than 100 species identical with those of Europe and the Atlantic islands, while only fourteen are peculiar. These facts imply that the insects, as a whole, have been brought to the islands through natural causes, and that the process is probably still going on. On looking to Physical Maps for information, however, a difficulty appears; for the ocean currents, as well as the prevalent regular winds, are all from the westward, while only four of the beetles are American, and these being all wood-borers, have no doubt been brought by the Gulf Stream where they have not been introduced by man. Fortunately, however, we have a means of getting over this difficulty; for our member, Mr. F. Du Cane Godman, who has given us the most recent and accurate information on the natural history of these islands, informs us (in his paper on the birds of the Azores in the "Ibis" for 1866) that the stormy atmosphere, to which we have seen that Madeira owes so many of its peculiarities, is still more marked a feature of the Azores, where violent storms from all points of the compass are frequent, and annually bring to their shores numbers of European birds. As a natural result of this constant influx, the birds of the islands are, all but two, of European species; and, what is very important, they decrease in numbers from the eastern to the western islands of the group. This is just what we should expect if they are stragglers from the eastern continent; but if they are the descendants of those which inhabited the country before its dismemberment, there would be no meaning in such a diminution. Now we can hardly doubt that these same storms also bring Coleoptera and other insects to the Azores, though it may be more rarely and in smaller numbers than in the case of the birds; and the large proportion of European species will then be very intelligible. The same explanation is suggested by the proportions of the most important groups, for while (after deducting all those species believed to have been introduced by man) the Geodephaga and Brachelytra are by far the most numerous, the Rhynchophora and the Heteromera are exceedingly few, a distribution which corresponds with their respective powers of flight. It is also a very important fact that only four non-introduced species can be traced to an American origin, while more than a hundred are European; since it shows of how little importance are ocean currents as a means of conveying insects over a wide extent of sea; whereas the great mass of the non-introduced species have evidently passed through the air, aided by their powers of flight, for a distance of about a thousand miles from Europe. The Azorean Elateridæ form a curious feature of its fauna, considering that the whole family is almost absent from Madeira and the Canaries. Of the six species two are European (one specially Portuguese), so that they may have been introduced with living plants. Two are common South American species, probably introduced in the floating timber, though they may also have come with living plants, which are often brought from Bahia. Two species, however, are peculiar, and one is closely allied to a Brazilian species, so that it must have been introduced by natural agencies before the settlement of the island; the other is of a genus confined to Madagascar.

Now it is a suggestive fact that the Mozambique current, bending round the Cape of Good Hope to the Equator, is one of the sources of the Gulf Stream; so that it is not impossible that a tree, carried down by a flooded river on the west coast of Madagascar, might ultimately reach the Azores. That it should convey living larvæ or pupæ of Elaters may also not be impossible; and if such a log reached the Azores but once in ten thousand years, and but one log in a thousand should convey living Elaters, we should still, if the calculations of geologists have any approximate value whatever, be far within the epoch of existing genera, and even of most existing species. A relation so isolated and extraordinary as that between a single insect of the Azores and those of Madagascar, may well be due to a concurrence of events as rare and improbable as this seems to be.

The Azores, and in a less degree the Madeiras, appear to me to teach us this important lesson in the laws of distribution of birds and insects—that it has been determined neither by the direction of ocean currents nor by that of the most prevalent winds, but almost wholly by such more exceptional causes as storms and hurricanes, which still continue to bring immigrants from the nearest lands.

SOCIETIES AND ACADEMIES

London

Zoological Society, March 21.—Mr. R. Hudson, F.R.S., in the chair. The Secretary read a report on the additions to the Society's Menagerie during the month of February, 1871.—Mr. Sclater exhibited a skin of the Ceylonese *Prinia*, recently spoken of by Mr. W. Vincent Legge in a communication to the Society, and now forwarded by that gentleman, which appeared to be identical with *P. socialis* of continental India.—An eleventh letter was read from Mr. W. H. Hudson, on the ornithology of Buenos Ayres.—Dr. Hamilton communicated an extract from a letter received from China relating to the reproduction of a Chinese Deer, *Hydropotes inermis*.—Mr. Sclater read a paper on the Birds of Santa Lucia, West Indies, containing an account of a collection recently made in that island by the Rev. Mr. Semper, and forwarded to Mr. Sclater by Mr. G. W. des Vœux. Amongst these specimens were two examples of an *Icterus*, believed to be undescribed and proposed to be called *I. laudabilis*.—Dr. R. O. Cunningham read a paper on some points in the anatomy of the "Steamer Duck," *Micropterus cinereus*, based upon specimens of this bird obtained by him during his recent voyage as Naturalist to the Survey of the Straits of Magellan. A communication was read from Mr. R. Swinhoe, containing a revised catalogue of the Birds of China and its islands. To this were added descriptions of new species, together with references to former notes and occasional remarks.

Chemical Society, March 16.—Prof. Williamson, F.R.S., president, in the chair. Mr. C. H. Piesse was elected a fellow. Mr. C. H. Gill read a note "On the examination of Glucose containing Sugars." It is known that coloured sugar solutions are decolourised and clarified by the addition of basic lead acetate before they are submitted to optical examination. Mr. Gill now found that the power of invert sugar to rotate a ray of polarised light is greatly altered by the presence of that reagent. The alteration takes place only on the levulose in the liquid, the dextrose suffers no change of optical properties. This alteration is not permanent—on removing the lead or acidifying the liquid the original rotatory power is restored. Mr. Gill employs these latter reactions in order to obtain correct numbers with the saccharometer. He uses a strong solution of sulphuric dioxide, which removes the lead, and at the same time bleaches the liquid, but is incapable of inverting cane sugar in the cold even in twenty-four hours. The presence of the lead salt in sugar solutions is also disadvantageous when the glucose has to be estimated by Fehling's copper solution, as it partly becomes reduced, and thus necessitates the use of a greater volume of the saccharine solution; the removal of the lead does away with this source of error.—Mr. D. Howard made some remarks on the boiling point of a mixture of amylic alcohol and water.—Mr. Perkin stated that he had succeeded in obtaining bromacetic acid by gradual addition of bromine to heated acetic anhydride, boiling for some time, mixing with water and subsequent distillation.—Mr. Warrington spoke briefly of an easy and sufficiently correct determination of ammonic sulphocyanide in commercial sulphate of ammonia.

Entomological Society, March 20.—Mr. A. R. Wallace, president, in the chair. Prof. P. M. Duncan, F.R.S., and Mr. E. S. Charlton were elected members. The Rev. L. Jenyns, in a letter to Mr. Dunning, made some remarks on the statement of Mr. Bond, at the last November meeting, respecting the swarming of *Chlorops lineata* in the Provost's Lodge at King's College, Cambridge. Mr. Jenyns had a similar swarm in 1831, and occurring probably in the same room.—Mr. Verral exhibited a fly, *Pipiza noctiluca*, from Perthshire, to the head of which a substance was adhering, probably the pollen-mass of an orchid.—Mr. Müller exhibited a gall, in shape like a grain of wheat, on the leaves of a *Carex*, sent to him by Lord Walsingham from Thetford.—Mr. C. O. Waterhouse read a description of *Apterocyclus honolulensis*, a new genus and species of Lucanidæ from the Sandwich Islands.—Mr. Wollaston communicated a paper on additions to the Atlantic *Coleoptera*, in which he recorded the results of recent observations, with corrections on synonymy, &c. He adhered to his original opinion that the Atlantic archipelagos were the remnants of a former continent, with a possible connection with south-western Europe, and, in this respect, he differed from the views of Mr. Wallace that the islands had received their insect fauna by means of atmospheric agencies, thus agreeing more with the theory enunciated by Mr. Andrew Murray in his recent essay on the geographical distribution of *Coleoptera*. A discussion ensued in which the President, Mr. Bates, and Mr. Murray took part; the two first-named gentlemen considering that the remarkable absence in the islands of reptiles and mammals, was an insuperable objection to the idea of a former Atlantic continent; Mr. Murray, on the contrary, contended that the great homogeneity exhibited in the fauna and flora could only be explained by supposing the islands to have once been connected by a land passage.

Biblical Archæological Society.—The inaugural meeting, which was largely and influentially attended, was held on Tuesday, March 21, at 8.30 P.M. Dr. Birch of the British Museum took the chair, supported by Prof. Donaldson, Captain Wilson, and Messrs. Bonomi, Boyle, Drach, &c. After the usual preliminary business had been transacted the chairman delivered an opening address, enumerating the circumstances which had led to the formation of the Society, and stating the various advantages offered to the scientific world by its institution. A concise summary was then given of the results of past and pending archæological investigations in Assyria, Egypt, Palestine, and Western Asia; these results it was now proposed to extend and systematise by the labours of the Society of Biblical Archæology, while the council hoped eventually to be able to undertake excavations of their own among the still unopened tumuli of Mesopotamia. Prof. Donaldson moved that the inaugural address be printed, and made some excellent remarks upon the necessity of exercising great tact in further investigations, as well as great promptitude in securing such valuable antiquities as were likely to be destroyed by superstitious barbarians.—Mr. Boyle, of Lincoln's Inn, seconded the resolution.—Captain Wilson, in proposing a vote of thanks to the chairman, expressed his pleasure in belonging to two societies, whose labours, though in different spheres, would mutually and materially assist each other.—Mr. S. M. Drach moved that the name of the indefatigable secretary, Mr. W. R. Cooper, should be added in the vote of thanks, seconded by the Rev. T. Gorman, and carried unanimously.—Mr. Bonomi, Rev. A. Mozley, and other gentlemen also addressed the meeting.—A list of papers to be read at future meetings, contributed by Sir Henry Rawlinson, Mr. H. Fox Talbot, Dr. Birch, and Messrs. G. Smith, Bonomi, and Lowne, was then announced, and the society adjourned to Tuesday, 4th April, 1871.

CAMBRIDGE

Philosophical Society, March 13.—"On the Attraction of an infinitely thin shell bounded by two similar and similarly situated concentric ellipsoids on an external point," by Prof. Adams, F.R.S.—"On the theory of the forms of floating leaves in certain plants," by Mr. Hiern, St. John's College. This problem was treated mathematically, the leaf being considered as at its edge a flexible body, acted upon by an outward radial force, that of growth, and an external pressure due to the velocity of the stream. The curves which would be assumed under various conditions were calculated, and shown to agree closely with the forms which are to be found in certain aquatic plants.—"On the effect of exhaustion and inflation of the tympanum in deadening sounds, and on the test of loudness," by Mr. Moon, Queen's College.

MANCHESTER

Literary and Philosophical Society, March 7.—Mr. E. W. Binney, F.R.S., president, in the chair.—"The Action of Sulphurous Acid on Phosphates," by Dr. Wilhelm Gerland, Macclesfield.—"Further observations on the Strength of Garden Nails," by Dr. J. P. Joule, F.R.S. The author thought it desirable to ascertain how far hardness had to do with the strength and elasticity of these small specimens of cast iron. For this purpose he plunged some of them at a heat near the melting point into water, then selecting those which had been hardened sufficiently to resist the action of the file. Others he cooled slowly from a bright red heat. The experiments were conducted in the manner described in the last number of the Proceedings:—

	No. of Experiment.	Length of Nail between Supports.	Breadth of Nail at Fracture.	Depth of Nail at Fracture.	Deflection.	Breaking Weight. lbs.
Hard Nails.	1	1·0	0·11	0·122	·0067	129
	2	1·04	0·12	0·12	·0037	84
	3	1·0	0·12	0·122	·0028	81
	4	1·02	0·143	0·102	·0077	129
	5	1·1	0·138	0·13	·0071	203
	Average	1·032	0·1262	0·1192	·0056	125·2
Soft Nails.	6	1·0	0·112	0·117	·0088	141
	7	1·05	0·139	0·114	·0087	150
	8	1·02	0·130	0·138	·0051	176
	9	1·04	0·117	0·090	·0101	101
	10	1·04	0·121	0·108	·0073	113
	Average	1·03	0·1238	0·1134	·008	136·2

Reducing to a length of 3ft. and 1in. square section, and making a deduction of one-eighth from the deflections, on account of the taper of the nails, the above results, along with those in the last number of Proceedings, become

	Breaking Weight.	Deflection.
Nails in original state .	2673	·922
Hardened ditto . .	2002	·677
Softened ditto . .	2448	·924

—Dr. Joule exhibited three photographs of the sun taken on the 1st December, 1858. The images, ·43in. diameter, were produced by the achromatic object-glass of a telescope with half-inch stop. Exposure, by means of an apparatus completely detached from the camera, during a small fraction of a second. He had been induced to examine them after seeing the beautiful photograph of the late eclipse by Mr. Brothers. On examining the three images a nebulosity is observed, very similar to that in Mr. Brothers' photograph. In all three, taken at an interval between each of about a minute and a half, the nebulous appearance appears situated on three quarters of the limb, the remainder being quite free. There are also indications of a radial structure, so that he thinks it highly probable that the representations are actually those of the corona. Since communicating the above, he has carefully examined the two other photographs of the sun which he possesses, and which were taken early in the month of November 1858. These, one of which must have been exposed at about two hours twenty minutes after the other, present nothing remarkable to the naked eye; but when viewed through a glass of moderate power, a thin crescent-shaped envelope is observed on each, with this remarkable circumstance, viz., that in the two it appears on opposite limbs, suggesting the idea of a semi-revolution in the above interval of time at a velocity not much less than that due to Kepler's law of planetary motion. In one of the photographs there is, under the crescent and apparently on the rim of the sun itself, a narrow band in breadth about $\frac{1}{300}$ of the diameter of the disc, and of at least double the intensity of the sun. This may probably be referred to the actinic action of the chromosphere and the red flames.—"On Anthraflavic Acid, a Yellow Colouring Matter accompanying Artificial Alizarine," by Edward Schunck, Ph.D., F.R.S.

DUBLIN

Royal Dublin Society, March 20.—Professor R. Ball in the chair. Prof. Traquair read a paper on the restoration of the tail in *Protopterus annectens*. Two specimens of moderate size were exhibited and described, in both of which the caudal extremity of the body had been evidently truncated by violence, and a restorative process had taken place. In the first specimen the reproduced portion measured half-an-inch in length, and contained a prolongation of the notochord of the lateral muscle, and of the spinal cord, but neither vertebral arches, spines, nor fin rays. In the second the reproductive process had gone on to a much greater extent, the new portion being two inches long, and contained besides a notochordal axis, a reproduction of all the other essential parts of the normal tail of Protopterus. The neural and hæmal arches, spines, and fin supports were, however, entirely cartilaginous and rather irregular in their disposition. They were not traceable beyond a distance of one-and-a-half inches from the origin of the reproduced part, while the notochord extended to the very tip.—Dr. Moore read a paper on a Fungoid Disease which attacks and destroys plants belonging to the Pandaneæ; he also exhibited a specimen of *Silenipedium caudatum*, which had flowered in the Glasnevin Gardens for the first time in Ireland.—Professor Dyer read a paper on the Germination of Seeds. While it was true that in most Dicotyledons the root end of the embryo is developed into a tap-root, and that in most Monocotyledons the radicle was not developed, but the roots were pushed out through the base of the cotyledon; there could be no doubt that there were exceptions to this rule, which were both sufficiently numerous and important to be borne in mind, and which it was a great mistake not to find noticed in our Manuals of Botany. Many examples were given, such as palms with their exorrhizal roots, and Tropæolum with its endorrhizal roots. Prof. Dyer, in the course of his interesting paper, alluded to and illustrated Prof. Dickson's news on the embryo of Zostera.—Mr. W. F. Kirby read some notes on three species of trap-door spiders whose nests are in the Museum of the Society.—The Royal Dublin Society ordered a letter to be written to the Director of the Jardin des Plantes, Paris, informing him that Dr. Moore, Director of the Botanical Gardens, Glasnevin, had received instructions from the Council to assist as far as he possibly can in supplying the losses incurred by the recent bombardment.—A letter has been received by the Society from Prof. Milne-Edwards, stating that Prof. Decaisne will send over lists of their desiderata, and that in a few days the venerable Director of the establishment, M. Chevreul, will forward to the Society a letter of thanks for the warm sympathy and extreme kindness shown to the Jardin des Plantes by the vote of the Society.

EDINBURGH

Botanical Society, January 12.—Alexander Buchan, M.A., President, in the chair. "Note on the Practical Application of Meteorology to the Improvement of Climate." By Alexander Buchan, M.A. "Notes on the Structure and Measurements of Cells in Hepaticæ." By James Williamson Edmond, M.B. "Notes on the Distribution of Algæ." By George Dickie, M.D., Professor of Botany, Aberdeen. "On the Flora of the South of France." By Mr. James F. Robinson. "Memoranda on Fir Cones in the Museum at the Royal Botanic Garden." By Alexander Dickson, M.D., Professor of Botany, Glasgow.

PARIS

Academy of Sciences, March 20.—M. Faye, president, in the chair. Baron Thénard, who had been arrested by the Prussians as a hostage, was present at the sitting. After the reading of the *procès verbal*, he made a speech, in which he thanked the Academy for the protest entered by it against his arrest by Prussians when Paris was actually besieged by Prussian guns.—M. Chevreuil delivered a very long and very able speech on the changes of different kinds which silk undergoes from chemical agents when passing through different colouring processes.—M. Mathieu, the oldest member of the Institute, presented the *Annuaire des Bureaux des Longitudes*, which should have appeared on the 1st January.—M. Delaunay said he had been to inspect the Villejuif pyramid, which was erected on one of the extremities of the basis measured by Picard two centuries ago. The pyramid was not destroyed, owing to the precautions taken for its protection. The meteor of the 17th March was seen from several stations, viz., at Paris by M. Prevot, surgeon to the marines, at 10^h 58^m, the luminous track remained visible for more than a hour; M. Samberg, Professor of Physics, at Rochelle, gives for the time 10^h 30^m. The track was visible for an hour; no explosion took place. The colour was green, and the duration of the apparition was twenty seconds. Many sparks were noticed.—A discussion took place between MM. Delaunay, Becquerel, and Saint-Claire Deville on the temperature of the past winter. It was proved that the temperature is always less severe at the Jardin des Plantes than at the Astronomical Observatory, and that at the Astronomical Observatory it is less severe than at Montsouris. It results from this discussion that it is useless to attempt to find the absolute temperature of any region independently of local circumstances, and it is only by the comparison of many different observations that the facts relating to temperature can be ascertained.—M. Quatrefages presented a description of some helminthoid worms which locate themselves in the throats of snakes. These helminthoids cause such an irritation that the throat is closed, and the animal perishes by suffocation. In the secret committee, which was opened at five o'clock, a sharp discussion was raised between members with respect to M. Deville's proposition.

BOOKS RECEIVED

ENGLISH.—Essays on Darwinism: T. R. Stebbing (Longmans).—A Manual of Structural Botany: M. C. Cooke (Hardwicke).—Aunt Rachel's Letters about Air and Water (Longmans).—Dynamics of Nerve and Muscle: Dr. Radcliffe (Macmillan).—Cassell's Natural History, new ed. part I. (Cassell).

FOREIGN.—(Through Williams and Norgate)—Handbuch der Chemie: D. K. Kraut.—Vorlesungen über nautische Astronomie 1^er^ Band, 1^te^ Abthielung: Dr. J. D. C. Weyer.—Handbuch der Anatomie des Menschen; J. Henle.—Atti della r. università di Genova, vol. I. Epilogio della Briologia Italiana: G. de Notaris.—Die Elemente der Krystallographie: J. M. Matzdorff.—Ueber Entwickelung und Bau des Gehörlabyrinthe: Dr. A. Boettcher.—Archiv für Anthropologie, 4^er^ Band, 1870.

DIARY

THURSDAY, MARCH 30.

ROYAL SOCIETY, at 8 30.—Experiments in Pangenesis, by breeding from rabbits, of a pure variety, into whose circulation blood, taken from other varieties, had previously been largely transfused: F. Galton, F.R.S.—Contributions to the History of Orcin. No. 1. Nitro-substitution Compounds of the Orcins: Dr. Stenhouse, F R.S.

SOCIETY OF ANTIQUARIES, at 8.30.—Ballot for the Election of Fellows.

CHEMICAL SOCIETY, at 8.—Anniversary Meeting.

ROYAL INSTITUTION, at 3.—Davy's Discoveries: Dr. Odling.

LONDON INSTITUTION, 7.30.—On Economic Botany: Prof. Bentley.

FRIDAY, MARCH 31.

ROYAL INSTITUTION, at 9.—Solar Myths: Prof. Max Müller.

SATURDAY, APRIL 1.

ROYAL INSTITUTION, at 3.—Spirit of the Age: Mr. O'Neil.

ROYAL SCHOOL OF MINES, at 8.—Geology: Dr. Cobbold.

MONDAY, APRIL 3.

ANTHROPOLOGICAL INSTITUTE, at 8.—Report on Settle Cave Explorations: W. Boyd Dawkins, F.R S.—On the Anatomical Writings of Prof. Calori: D. Barnard Davis, F.R.S.—Builders of Megalithic Monuments in Britain: A. L. Lewis.

ENTOMOLOGICAL SOCIETY, at 7.

LONDON INSTITUTION, at 4.—On Astronomy: R. A. Proctor.

ROYAL INSTITUTION, at 2.—General Monthly Meeting.

TUESDAY, APRIL 4.

ZOOLOGICAL SOCIETY, at 9.—On some new and little-known species of Madrepores, or Stony Corals, in the British Museum collection: W. Saville Kent, F.Z.S.—Notes on some Indian Siluroid Fishes: Francis Day.

WEDNESDAY, APRIL 5.

GEOLOGICAL SOCIETY, at 8.—On a new Chimæroid Fish from the Lias of Lyme Regis: Sir P. de Malpas Grey Egerton Bart., M.P., F.R.S —On the Tertiary Volcanic Rocks of the British Islands: Archibald Geikie, F.R.S.—On the formation of "Cirques," and their bearing upon theories attributing the excavatipn of Alpine Valleys mainly to the action of Glaciers: Rev. T. G. Bonney, F.G S.

ROYAL MICROSCOPICAL SOCIETY, at 8.—On the Mode of working out the Morphology of the Skull: W. K. Parker, F.R.S.—On Linear Projection considered in its application to the delineation of objects under Microscopic Observation: Charles Cubitt, C.E.

THURSDAY, APRIL 6.

ROYAL SOCIETY, at 8.30.

SOCIETY OF ANTIQUARIES, at 8.30.

LINNEAN SOCIETY, at 8.—On the stigmas of *Proteaceæ*: G. Bentham, Pres. L. S.—On the generic nomenclature of *Lepidoptera*: G. R. Crotch.

CHEMICAL SOCIETY, at 8.—On Burnt Iron and Burnt Steel: W. Mattieu Williams.—On the formation of Sulpho Acids: Henry E. Armstrong.

ROYAL INSTITUTION, at 3.—Davy's Discoveries: Dr. Odling.

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